THE FARM INDEX

U.S. Department of Agriculture / July 1973

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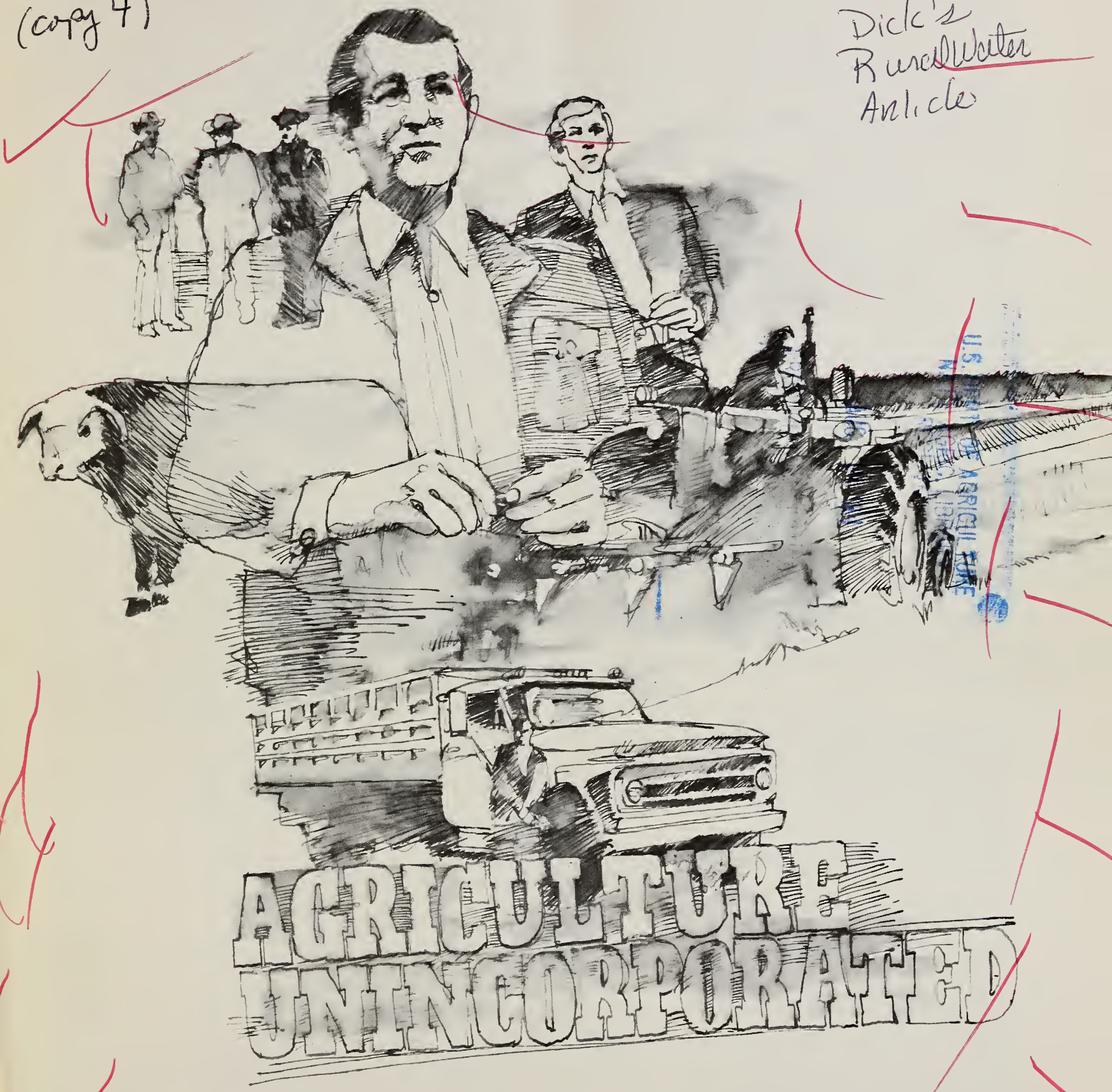


AGRICULTURE UNINCORPORATED

Outlook

The next several months hold little price relief for buyers of feeder cattle. ERS reports feeder prices may not change much this summer or in the fall. Mid-June quotations at Amarillo, Texas, were running near $52 per hundredweight for Choice steers weighing 600 to 700 pounds—$14 above a year ago.

Historically, feeder cattle prices slip in the fall when marketings increase seasonally. But in the last couple of years the demand for cattle has been sufficient to hold or lift prices during the fall. Demand for replacement cattle will probably stay strong in the second half of the year, especially if feed prices dip as now seems likely.

Story for fed cattle prices reads a little differently than for feeders. Choice steers at Omaha fetched nearly $47 per hundredweight in mid-June, $10 more than a year ago. Though summer prices are expected to remain close to current levels, some weakening might develop in the fall months. That's when the volume of cattle marketings picks up and so does hog slaughter. On the supply side, fed beef will be a bit more plentiful this summer compared to last spring and a year earlier.

The economic impact of the total ban on DES? Economists don't have the information to make an assessment just yet. It does seem likely, though, that the ban on implants of this growth stimulant in cattle and sheep will not have a substantial effect for a while. Reason is that animals implanted with DES before the ban of April 27 will be coming to the market for the next few months.

Later on, however, this ban could result in some additional feed requirements and longer time periods to get animals to desired market weights. There are other approved growth stimulants that may be as effective as DES. But they are more expensive and the extent of their use is not known.

Reduced offerings of broilers will be the case through mid-summer. Broiler chick placements and egg sets indicate market supplies will be down about 2 percent from a year earlier. Placements and sets for fall marketings should recover to year-earlier levels. However, recent rises in feed costs have cast shadows over the outlook. Producers are expressing concern about future profits in broiler raising, and this could lead to production cutbacks.

Steady hikes in cigarette use show no signs of slackening. Domestic use in the 10 months ending April 1973 gained about 2½ percent from a year earlier. With exports up sharply, output in the year ending June 30 is expected to top the 1972 figure of 593 billion by around 3 percent. Further increases are likely in the July–December period.

In contrast to the gain for cigarettes, use of large cigars and smoking tobacco continues to fall. Consumption for the year ending June 30 is seen about 7 percent smaller than the 7.6 billion used in 1971/72. Production of snuff and chewing tobacco may remain near last year's levels.

U.S. exports of unmanufactured tobacco set a fast pace in the July 1972–April 1973 period but have since slowed. Shipments for the fiscal year may be up 3–4 percent from the previous year's 525 million pounds.

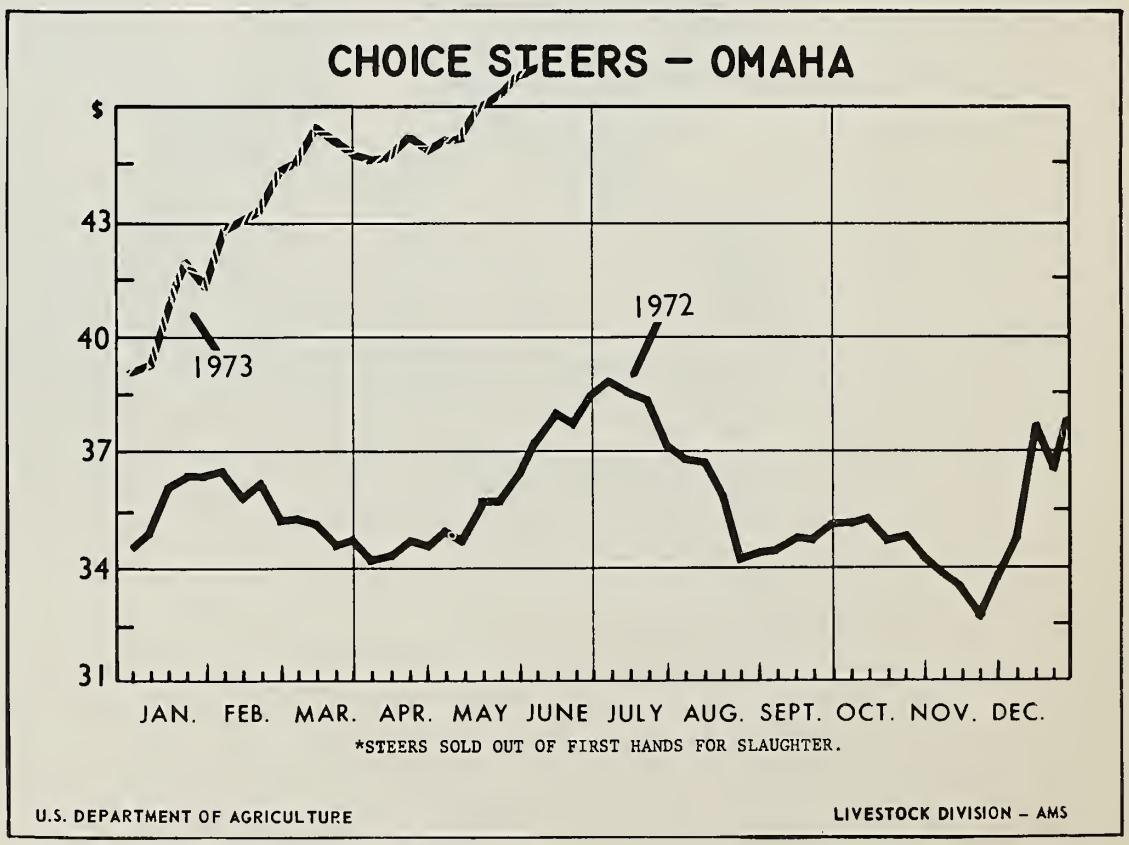
The floods notwithstanding, ERS cotton specialists do not anticipate a shortage of cotton supplies this year. Flooding has undoubtedly cut cotton acreage in the Mississippi Delta. On the other hand, producers in the West and Southwest upped plantings in response to high cotton prices this spring. Assuming yields are near average, production would about match demand.

The Nation's vegetable bin is running low on processed items. Stocks of practically all processed vegetable products are the skimpiest in years, particularly frozen peas and canned green beans.

ERS economists figure that in the new packing season which is now getting under way, the market could absorb larger production without putting much pressure on prices.

Supply situation is also tight for potatoes. The spring crop was only a shade bigger than the small output in the spring of '72. Potato prices in May were more than double the year-earlier levels, and they're expected to remain on the high side through August.

Florida's citrus processors are squeezing out a record pack of frozen concentrated orange juice. In early



June the total pack had already surpassed last season's 134 million gallons, reflecting this year's record-breaking orange crop.

Consumer demand has been brisk. Total movement of frozen concentrate as of mid-June was about a fifth ahead of a year ago. Even so, stocks of concentrate are piling up. In early June they were more than a fourth larger than at that time in 1972. Inventories are seen building further before the season ends in late July.

Larger supplies of fresh noncitrus fruit are expected this summer. June indications pointed to an increase of about 9 percent from 1972's short crop. Generous supplies of sweet cherries and Bartlett pears are on the way, but nectarines and peaches will be at more moderate levels. The 1973 apricot crop is forecast nearly a fourth more than the quantity that was used last year.

High-priced and scarce. That's the picture for protein feed ingredients until soybean meal from the new crop becomes available in the fall. Soybean meal stocks at crusher locations are expected to diminish during the rest of the summer. Supplies of other oilseed meals, with the possible exception of cottonseed meal, are also likely to remain costly and difficult to obtain.

Supplies of protein ingredients of animal origin will be less plentiful too. These include fishmeal, meat scrap meals, poultry byproduct meals, and feather meals. Moreover, feed manufacturers face keen competition from pet food manufacturers and export interests for certain types of these items.

July 25–31 is National Farm Safety Week, and the theme is "Falls hurt!" Sponsored by the National Safety Council and the USDA Farm Safety Committee, the event will feature messages over radio and TV and other media on how to prevent falls on the farm. A recent survey taken by the National Safety Council showed that of some 3,800 accidents occurring on 19,650 farms in a 5-month period, almost a third were due to falls.

Contents

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Figures soon to be released by the Census Bureau back up what an ERS survey concluded a couple of years ago—that corporations occupy a very small niche in the Nation's farm economy.

The data appear in a summary volume of the 1969 Census of Agriculture—the first to provide information on the numbers and types of business organizations engaged in farming.

Farm corporations, by the 1969 count, totaled 21,513. They operated only 1.2 percent of all commercial farms in the U.S. Moreover, only about 1,800 had more than 10 shareholders, and fewer than half of these reported farm sales above $100,000.

Roughly 19,700 farm corporations —over 90 percent of the Nation's total—were "closely held," meaning they had not more than 10 shareholders. Most of these firms were family owned and were essentially larger-than-average farms or ranches that were individually owned or partnerships before they became incorporated.

By sales class, the largest number of corporations—some 8,000—turned up in the $100,000-and-up bracket. More than 7,000 of these were firms with 10 or fewer shareholders and were largely family owned.

Sole proprietorships remain the dominant type of farm in all sales classes. In 1969, they comprised nearly 60 percent of all farms with

sales over $100,000. Partnerships made up 25 percent, and corporations, 16 percent.

Among farms selling $20,000-$39,999 and $40,000-$99,999, corporations operated 0.9 and 2.5 percent respectively, according to the last Census.

The $2,500-$19,999 sales category contained just over 6,000 corporate farms—compared with more than a million sole proprietorships. There were about 500 corporations with more than 10 shareholders in this sales class.

Corporate sales. Though they're most prevalent in the highest sales classes, corporations accounted for only 14 percent of sales from all commercial farms in 1969. Firms with more than 10 shareholders claimed only 3 percent.

The '69 Census also collected data on a State-by-State basis making the distinction between corporations that are closely held and those with more than 10 shareholders.

Top corporation States were California, Florida, and Texas with some 4,800 corporate farms of all types, sizes, and sales classes. These three States also claimed more than a fourth of the Nation's farms with more than 10 shareholders. California headed the list with 217, followed by Texas (135) and Florida (130).

Roughly 2,400 farm corporations in California, Texas, and Florida reported sales in excess of $100,000 in 1969. Just over 300 had more than 10 shareholders.

Of all States, Hawaii contained the largest share of corporations with more than 10 shareholders. Forty of the 130 corporations counted by the last Census fell in this category. These firms were primarily engaged in sugarcane and pineapple production.

Restrictions. North Dakota, which forbids corporations from entering farming, fell at the other end of the spectrum. North Dakota law, however, does not consider feedlots as farms, so these are allowed to incorporate. The '69 Census counted 15 large farm corporations (sales over $100,000) in North Dakota, but only one had more than 10 shareholders.

A few other States—none of them major producing areas—had less than a dozen large corporations with over 10 shareholders. And more than half the States had fewer than 25 of this type of corporation.

Restrictions on farm corporations are written in the lawbooks of several other States besides North Dakota. Under Kansas law, for example, corporations aren't allowed to produce wheat, corn, barley, oats, and several other crops, nor to engage in dairying. But Kansas makes exceptions if the corporations are relatively small closely held family operations.

Minnesota statutes prohibit farming corporations from acquiring more than 5,000 acres of land. That State reported 49 corporations with more than 10 shareholders, and these firms accounted for 0.5 percent of sales from all commercial farms in that State in 1969.

Texas, another State with restrictions on farming corporations, bars its numerous ranching corporations from engaging in stockyard, slaughtering, canning, curing, or meat packing activities.

Commodity involvement. Though corporations don't confine their operations to any predominant farm types, there were more large-scale corporations—those with sales over $100,000—classified as "other livestock" than any other type. Most of these farms sell fed cattle and calves. Poultry farms ranked second in number, with livestock ranches a close third.

There were also 2,800 large-scale fruit and nut farms, of which 856 were incorporated. More than half of these corporate farms were in California and Florida—the major fruit and nut States.

Corporate farms, even the closely held type, are not common for large-scale cash grain, dairy, tobacco, and cotton farms. Taking all crop-type farms (except fruits and nuts) as a group, there were about 200 with more than 10 shareholders, and 1,567

CORPORATIONS WITH 10+ SHAREHOLDERS

State	Number	Sales (as % of all commercial farms in each State)
Ala.	23	0.9
Alaska	2	*
Ariz.	39	5.1
Ark.	56	1.1
Calif.	217	6.2
Colo.	40	3.8
Conn.	9	12.8
Del.	4	5.1
Fla.	130	10.7
Ga.	35	0.5
Hawaii	40	55.0
Idaho	16	2.9
Ill.	63	0.6
Ind.	39	0.9
Iowa	68	0.7
Kans.	41	4.7
Ky.	25	0.3
La.	95	3.2
Maine	4	1.9
Md.	17	1.2
Mass.	16	7.7
Mich.	27	0.5
Minn.	49	0.5
Miss.	24	1.3
Mo.	32	0.3
Mont.	24	1.5
Nebr.	42	1.1
Nev.	6	6.3
N.H.	2	*
N.J.	10	1.6
N. Mex.	24	1.6
N.Y.	19	1.1
N.C.	70	0.8
N. Dak.	8	0.2
Ohio	52	1.2
Okla.	18	4.1
Oreg.	17	0.7
Pa.	31	2.7
R.I.	1	*
S.C.	16	0.6
S. Dak.	14	0.7
Tenn.	18	0.9
Tex.	135	6.3
Utah	18	0.9
Vt.	2	0.1
Va.	35	1.5
Wash.	38	5.4
W. Va.	6	0.6
Wisc.	62	1.2
Wyo.	18	1.2
U.S. Total	1,797	2.9

*Less than .05 percent.

with 10 or fewer shareholders. For example, of the 5,000 large dairy farms with sales of $100,000 or more, only 26 had more than 10 shareholders.

Plenty in poultry. Poultry farms are more frequently incorporated than dairy farms. The '69 Census found 1,119 corporate farms with sales of $100,000 or more, of which 125 had more than 10 shareholders. Some of these are firms that have integrated feed manufacture, production of eggs, broilers, or turkeys and poultry processing.

Only 2.6 percent of sales of all livestock and livestock products in 1969 came from corporations with more than 10 shareholders. That year, crop receipts from all commercial farms totaled nearly $17 billion. Firms with more than 10 shareholders garnered $527 million, or less than 3 percent.

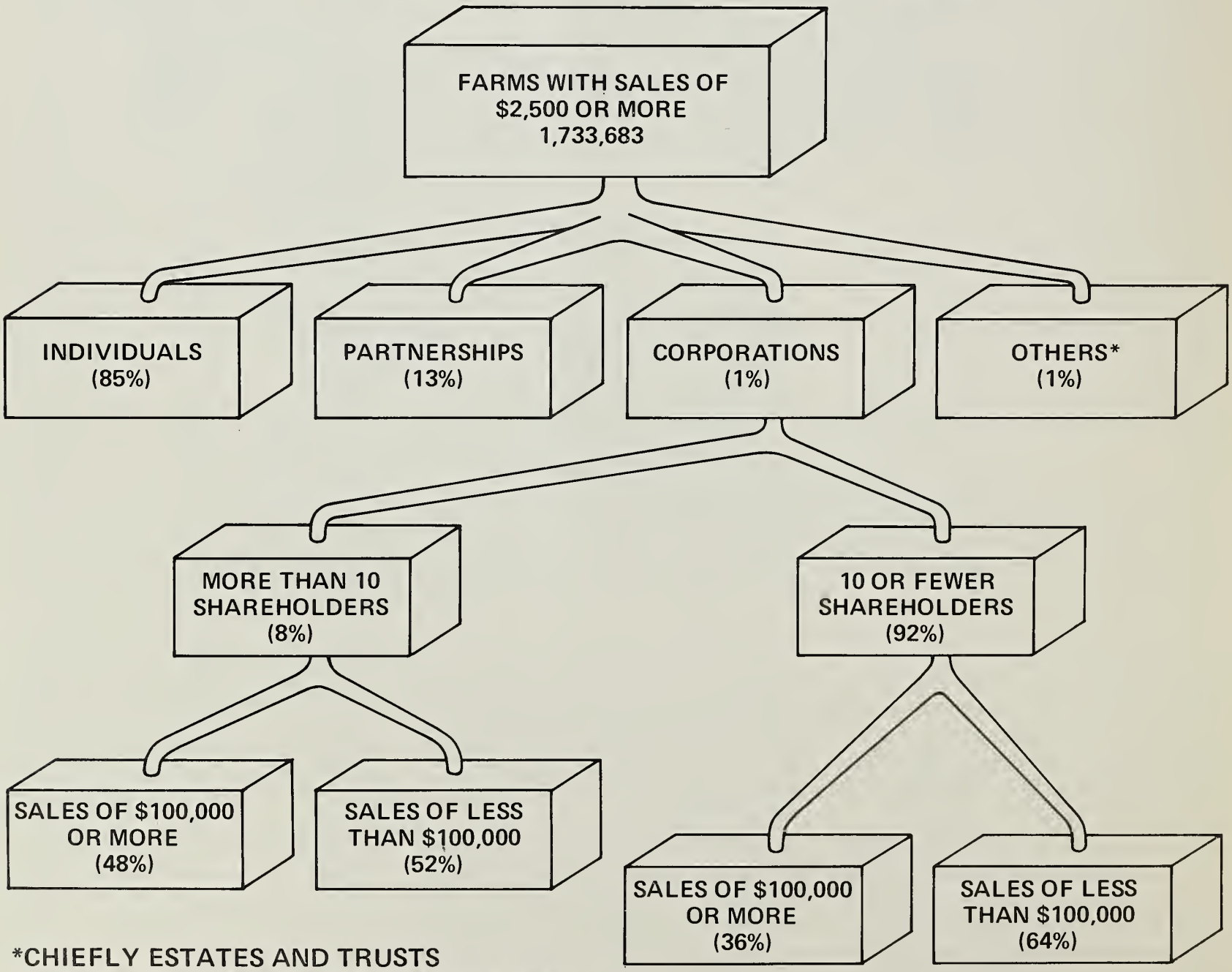
Big corporations don't exactly have a corner on our farmland either. Census figures revealed that all corporations operated roughly 80 million acres of commercial farmland in 1969. This amounted to about 9 percent of all land in farms with sales above $2,500. However, less than 2 percent was held by firms having more than 10 shareholders.

Regionally, corporations operated the largest proportion of land in the Southeast, Mountain, and Pacific States. The Mountain States alone contained more than half of all land held by corporations in the U.S.

Small showing. Corporate farms occupied less than 2 percent of all commercial farmland in the Lake States and Corn Belt, where a lion's share of the Nation's feed grains, hogs, beef, and dairy products originates. Firms with more than 10 shareholders had negligible holdings in both regions.

[Based on special material prepared by George W. Coffman, Jr., Farm Production Economics Division.]

STRUCTURE OF U.S. FARMING



*CHIEFLY ESTATES AND TRUSTS
SOURCE: 1969 CENSUS OF AGRICULTURE, VOL. 1

Farm Corporations: Financial Portrait

When it comes to paying taxes, a good many of our farm corporations are treated as partnerships.

A special tabulation of tax returns for 1968 prepared by the Internal Revenue Service (IRS) showed that out of 20,000 returns filed by farm corporations, over 6,100 (about 30 percent) did not pay the corporate income tax. Instead, they elected to use the "subchapter S" option. This allows shareholders of corporations with 10 or fewer shareholders to report corporate earnings on their individual tax returns in the same way partnerships report their income.

In 1963–68 the number of farm corporations exercising this option increased 65 percent, an ERS study based on IRS data said. Most were probably not new operations but incorporations of previous sole proprietorships or partnerships.

Business receipts for "subchapter S" farm corporations averaged about $125,000 in 1968 versus $41,000 for farm partnerships and $12,000 for sole proprietorships.

Forty-one percent of farm corporations had business receipts of less than $50,000 in 1968, and assets averaged $317,000.

The greatest numerical increase in farm corporations during 1963–68 was in the $100,000-$499,999 asset group, which also had 42 percent of farm corporations.

Average rate of return to equity in 1968 (ownership capital) was 6.4 percent before taxes.

Taking 1963–68, return to equity was only 5.3 percent. This was partly because nearly half the corporations reported losses and were unable to reduce their expenses in proportion to the reduction in receipts.

Farm corporations as a group appeared to have moderate financial strength and adequate reserves, although short-term debt represented a rather high proportion of assets.

[Based on a manuscript by George W. Coffman, Jr., Farm Production Economics Division, entitled Farm Corporations: A Financial Analysis.]

Men and Milestones

Washington, D.C., 1894—The U.S. Department of Agriculture hires Mark A. Carleton as a cereal expert.

Born in Ohio in 1866, raised and educated in Kansas, Carleton was a wheat specialist. And at the time he came to USDA, scientists were predicting that population increases would outstrip wheat supplies by 1931 unless ways were found to increase production. Carleton set out to avert the crisis.

He went to Russia in 1898 to search for high-yield, drought and rust resistant wheat varieties that could be grown more widely in the U.S. than traditional types.

In 1899, he brought back Kubanka, a wheat that one observer said could grow in hell. Instead, it eventually found a home in the Great Plains where it marked the beginning of the U.S. durum wheat industry.

A year later Carleton returned to Russia, coming home this time with a hard winter wheat called Kharkov.

Yet, simply introducing new wheat varieties wasn't enough. Hard winter wheat, for example; first came to the U.S. with Mennonite immigrants in the 1870's, but it never caught on with Americans.

So Carleton began a relentless campaign to convince growers, millers, and consumers of the advantages of his discoveries. And he succeeded, thus guaranteeing himself a place in American agricultural history. But he didn't stop there.

As head of USDA's Office of Cereal Investigation — a post awarded him soon after his return from Russia—he introduced the Swedish select oat and experimented with the Sixty-Day oat, which became the general-purpose variety planted in the U.S. He brought winter barley cultivation to the Midwest and advocated dry farming in the Texas Panhandle.

Carleton left the Department in 1918. He spent most of the next 7 years working in Central and South America, dying in Peru on April 26, 1925.

[Based on special material by the Agricultural History Branch.]

Cigar Tobacco Acreage Not What It Used To Be

We may be witnessing a return to nostalgia in fashion and films, but ERS experts don't foresee any return to the heyday of large size cigar sales back in the 1920's.

In fact, cigar tobacco acreage is expected to further decrease over the next few years—even though it's decreased by two-thirds since 1950.

Among the reasons: there won't be enough rise in farm prices to encourage farmers to produce more, what with leaf-economizing techniques used by manufacturers and increasing competition from imports; consumers have switched to smaller, thinner, filter-tipped cigars and cigarillos that require less tobacco; and wage rates have more than doubled over the past 20 years and are expected to continue to climb —a fact that significantly affects acreage for this labor-intensive crop.

Cigar tobacco accounts for less than 4 percent of total U.S. tobacco production, and in 1971 had a farm value of $68.5 million. Some 15,000 farm families received income from the crop.

Cigar tobaccos include the most costly and most difficult to raise of all tobaccos—shade-grown cigar wrapper. It's estimated that it costs $4,000 to $5,000 to produce 1 acre.

Shade-grown wrapper is used primarily for cigar covers. Leaves must be elastic, free of injury, uniform in color, have good burning qualities, and they need to be very thin, smooth, and of fine quality. Virtually all this tobacco is grown under sales contracts or on farms owned by cigar manufacturers.

Cigar tobaccos are classified as to their main use, either as wrapper, filler, or binder. They require a lot of labor—filler and binder tobaccos require 300 hours or more of labor per acre and wrapper requires about 1,200 hours.

Tobacco prices, though they have increased over the past 2 decades, have not kept pace with farm wages. Filler and binder prices have been held down by large supplies and competition from imports.

In its analysis, ERS gave a breakdown of changing acreages of cigar tobacco since the 1950's.

Filler. A medium to heavy body tobacco, filler is used primarily for the core of the cigar. Its important factors are flavor, aroma, and burning quality. About 90 percent of U.S.-grown filler is produced in Pennsylvania, and the remainder in Ohio. Total acreage dropped from about 45,000 acres in 1950 to 19,000 acres in 1971. Yield has averaged an annual increase of 15 pounds—less than 1 percent, but acreage reduction has resulted in production being cut in half since 1950—totaling 33 million pounds in 1971.

Binder. Used for binding the bunched filler into the shape of a cigar, natural binders must have good burning quality, aroma, and elasticity. However, reconstituted sheet tobacco, a development of the 1950's, has rapidly replaced most natural leaf binders. As a result, loose leaf chewing tobacco is now the principal outlet for binder tobacco. Wisconsin accounts for nearly 90 percent of production. Total cigar binder acreage is down about 60 percent from 1950. Yields increased about 4 pounds a year from 1950–71, but production dropped by half.

Wrapper. To produce the best quality, wrapper leaves must be protected from the sun and extremes of weather. Fields are enclosed with a cloth-covered framework, which drives up labor and production costs.

Wrapper tobacco is produced in Connecticut, Massachusetts, Georgia, and Florida.

Acreage dipped from 13,000 acres in 1950 to 7,600 acres in 1971, with most of this decline occurring from 1968 to 1971. Growers blame the drop on the declining labor force and rising wage rates. However, lower-cost homogenized wrapper also has reduced the demand for natural wrapper.

[Based on manuscript by Johnny D. Braden, Economic and Statistical Analysis Division, entitled Analysis of Changes in Cigar Tobacco Leaf Acreage.]

Farm Population Totals 9.6 Million, Census Shows

The latest annual count of farm residents in the U.S. is 9,610,000—an indicated increase of 185,000 from the previous year, 1971.

However, the data are derived from sample surveys that cannot measure such minor year-to-year changes with precision. The indicated increase is not "significant" in statistician's terms, and is not a reliable signal that the long-term decline in farm population has ended. Samplings in 1973 suggest a resumption of the pattern of decline is now occurring.

The count is taken by the Bureau of the Census and ERS and is for the 12-month period centered on April 1972.

It shows 1 out of 4 farm residents in 1972 were under 14 . . . and 1 in 10 were 65 years old or older—not much different from the nonfarm population.

However, the farm population had a lower percentage of young and middle age adults. Persons 20 to 44 years of age accounted for 1 in 4 of the farm population . . . but nearly 1 in 3 of the nonfarm total, showing the persistent high rates of outmigration among young farm adults.

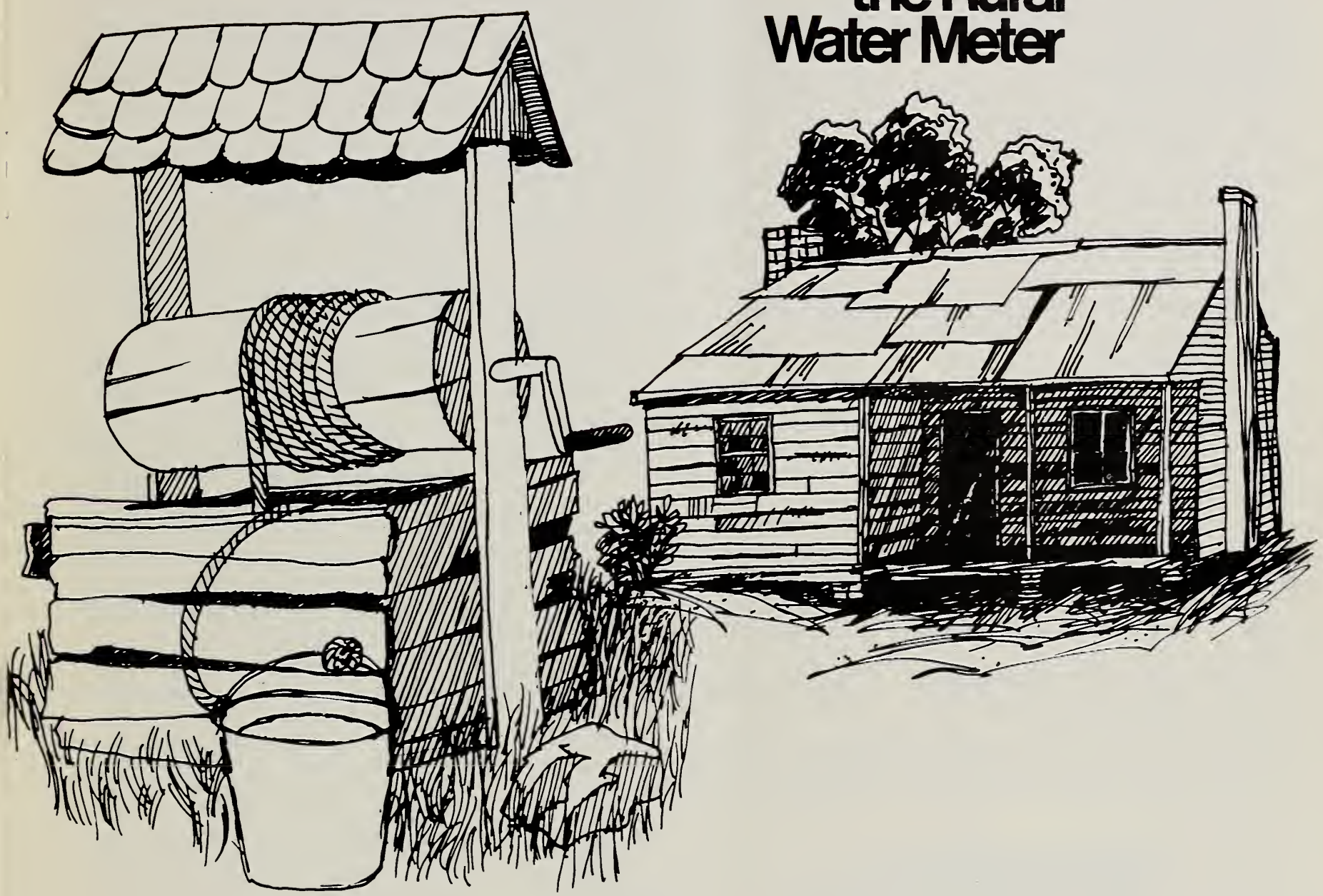
Males continued to outnumber females in the farm population—by 108 to 100. In contrast, the nonfarm civilian sector had 92 men for every 100 women.

The farm population had about the same percentage in the labor force in 1972 as it did in 1960—about 3 out of 5 farm dwellers 14 years old or over. However, during this period there has been an increase in employment of farmwomen, and some decline in the proportion of farm men at work.

Of the total of 3.7 million persons employed in agriculture in 1972, 1.4 million, or 37 percent, did not live on a farm.

[Based on manuscript by Vera J. Banks, Rural Development Service, entitled Farm Population of the United States: 1972.]

Checking the Rural Water Meter



Five million Americans—about as many as live in our 12th most populous State—are without running water in their homes. RDS pinpoints just where they live.

If you don't have running water in your home, the chances are 9 to 1 that you live in a rural area.

And there's more than a 50-50 chance that you live in the rural South.

All in all, there are some 5 million Americans who don't have piped running water in their homes.

In a region-by-region and State-by-State breakdown of estimates based on the 1970 Census of Housing figures, USDA's Rural Development Service (RDS) reports:

√ More than 40 percent of the people in the country who live in homes without piped running water live in rural areas in the eight southern States that make up Federal Standard Region IV (Ky., Tenn., N.C., S.C., Ga., Ala., Miss., and Fla.).

√ Another 12 percent are also located primarily in the rural South—in rural areas in Standard Federal Region VI (Ark., La., Tex., Okla., and N. Mex.).

√ Of all States, Mississippi has the biggest share of its population living in homes without running water. Overall, about 3 out of every 20 Mississippi residents lived without such facilities in 1970, but in rural areas, it was 1 out of every 4.

√ In terms of sheer numbers, Kentucky had the most people—more than 370,000—who lived in homes

without running water. But North Carolina, Virginia, and Mississippi each had more than 300,000 residents living in such homes.

Nationwide, more than 95 percent of the population have both hot and cold running water in their homes. Another 2 percent have cold water only. Thus, less than 3 percent of the U.S. population are without running water in their homes.

A rural concentrate. But a rural-to-urban comparison shows that nearly 9 percent of the rural population have no running water compared with only three-tenths of 1 percent for the urban population. Region IV—the Southeast—leads with nearly 16 percent of its rural population without running water, followed by Region VI—the South Central States—with 11 percent.

During the sixties, there was a substantial decrease in the number of houses in the Nation without running water. The 1970 Census showed nearly 2.5 million fewer units without running water than did the 1960 Census. This figure may be a little high since the Census in 1970 did not provide piped-water data on some 1 million seasonal housing units.

Every State except Alaska showed at least a 40–percent decrease in the number of units without piped water. In five States (Conn., R.I., Mass., N.J., and Oreg.) the decrease exceeded 75 percent. Total housing units in the United States, nevertheless, increased by nearly 10 million during the decade.

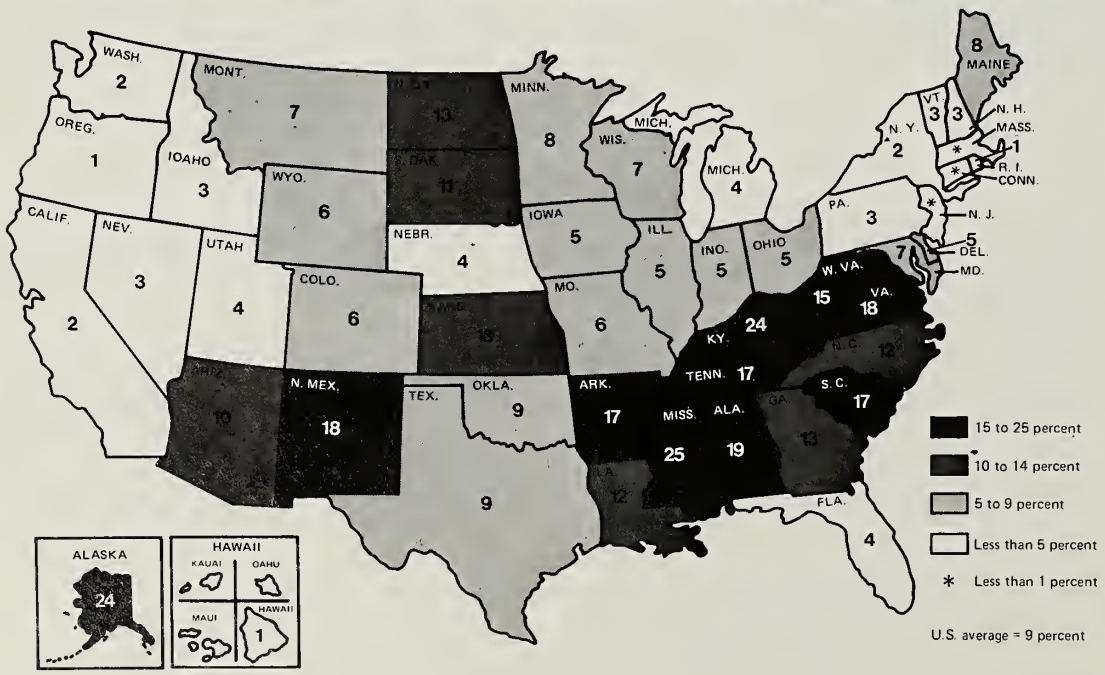
Most of the decrease in housing units without piped water occurred in rural areas—places with fewer than 2,500 residents and outside of urbanized areas. The 1960 Census showed 3.7 million rural housing units without piped running water, but the 1970 Census showed only 1.5 million such units. The rural decrease, therefore, is 2.2 million of the 2.5 million total.

Texas tops. For nine States, the decade brought drops of 90,000 or more in the number of rural housing units without piped water. Texas, with a 125,000-decrease, led the list, followed by North Carolina, Missouri, Tennessee, Kentucky, Mississippi, Georgia, Arkansas, and Alabama.

One thing that did not change appreciably during the decade was the fact that rural areas continued to have more than 90 percent of all U.S. homes without running water.

[Based on special material by Richard N. Brown, Economic Development Division, Rural Development Service.]

PERCENT OF THE RURAL POPULATION—BY STATES—WITHOUT PIPED RUNNING WATER IN THEIR HOMES



Michigan Study Probes Waste Management Costs

As environmentalists address the problems of animal waste management, dairymen voice concern about possible costs.

A recent study explored the added costs to Michigan dairymen if they had to comply with three pollution control measures now under consideration. Twelve "representative" dairy farms of specified herd size, housing, and waste handling combinations were analyzed.

The first measure halts surface water runoff at the production site. The second curbs runoff from the fields where manure is spread, by prohibiting applications during the winter.

The third control also combats field runoff—as well as odor—by requiring that dairy wastes are either plowed down immediately after spreading, or injected into the soil.

Control of runoff at production sites—the first proposal—applies mainly to dairies with open lot housing, where runoff is created both by rainfall on the lot and by water flowing across the lot.

Ways to arrest runoff differ from farm to farm, but on-site control generally requires construction of:

√ earth embankments or dikes on at least two sides of the production site to divert water that tends to flow across the lot,

√ a detention pond to catch water and wastes and retain them for up to 6 months, and

√ irrigation facilities to empty the pond twice a year—usually early spring and late fall.

Investment in these facilities is estimated at $3,875 for an 80-cow system, and $5,525 for a 160-cow herd. If the smaller dairy annually sells at least 13,000 pounds of milk per cow, this method of waste control adds 8¢ to the cost of producing each hundredweight of milk. For the 160-cow herd, production costs rise 6¢ per hundred pounds.

Compliance with the ban on winter spreading would prove far more costly as most Michigan dairymen

would have to build new storage facilities or enlarge current capacities.

For dairy farms using open lot systems, the storage facility would resemble a bunker silo and probably require a stacker to move wastes from the housing facility to the storage area.

In cold covered housing systems, wastes would usually be scraped directly from barn alleys into a roofed structure at the end of the barn. Dairies with warm enclosed housing generally use liquid waste systems with 3-months' storage capacity.

Providing 6-months' storage capacity cost the least ($4,800) for 80-cow herds in warm enclosed housing when outside storage ponds were developed. However, warm enclosed housing systems also required the greatest investment ($13,200) if underground storage tanks were added instead.

Dairymen with open lot housing would have to invest roughly $9,600 to build waste storage silos for 80-cow herds, and $17,300 for 160-cow facilities.

In terms of milk production, not spreading wastes in winter could tack on 11¢ to the cost of producing each hundredweight of milk in 80-cow dairies with open lot housing, and 13¢ per hundredweight in warm enclosed systems.

If winter spreading were banned, odor problems would escalate because larger amounts of waste would be spread at one time. The third control measure—subsurface disposal—could solve this dilemma.

For dairy systems handling wastes as a solid, compliance with this regulation demands only that dairymen plow down wastes at time of field application. If a dairy has 6-months' storage capacity, subsurface disposal would require no additional investment and could be incorporated with spring and fall plowing.

Dairymen who handle wastes as a liquid would have to add a soil injector to their existing liquid spreading equipment—an investment of roughly $700. Labor costs would rise slightly too, but the overall increase in milk production costs would amount to 2¢ per hundredweight for the 80-cow operation, and 1¢ per hundredweight for the 160-cow dairy.

[Based on a forthcoming article available from Michigan State University entitled Economic Impacts of Imposing Selected Pollution Control Measures on Michigan Dairy Farms, by Darrell Good, Cornell University; L. J. Connor and C. R. Hoglund, Michigan State University; and J. B. Johnson, Farm Production Economics Division.]

Farmland Value Per Acre Shows Sharp Rise

Farm real estate values went up 13 percent per acre in the year ending March 1 . . . and indications are that they'll continue at a high rate through '73.

In ERS's Farm and Rural Land Market Survey on March 1, reporters said they expected farm real estate values to continue to rise rapidly through the year.

ERS said that while the current high rates of increase are unlikely to be sustained for very long, it is likely that for the next few years the rates will at least match those of the long-time trend. Since 1967, farm real estate values per acre have risen 50 percent.

The strong increases in value shown in the past year were credited to several factors: a rapid increase in the money supply, and, in turn, readily available credit and stable interest rates; 2 consecutive years of favorable prices and farm income, plus expectations of a third; a continuing strong demand for rural homes and private recreation areas; and a constant demand for land for housing and commercial developments. An additional factor might be people and firms with investment funds seeking to hedge against continuing inflation by buying land.

Among States, Wisconsin showed the most rapid rise in land values—21 percent.

Only four States showed increases of less than 10 percent—California, Utah, Arizona, and Louisiana. California had the slowest rise—2 percent—as modest declines in irrigated and dry cultivated cropland values offset a strong boost in grazing land values.

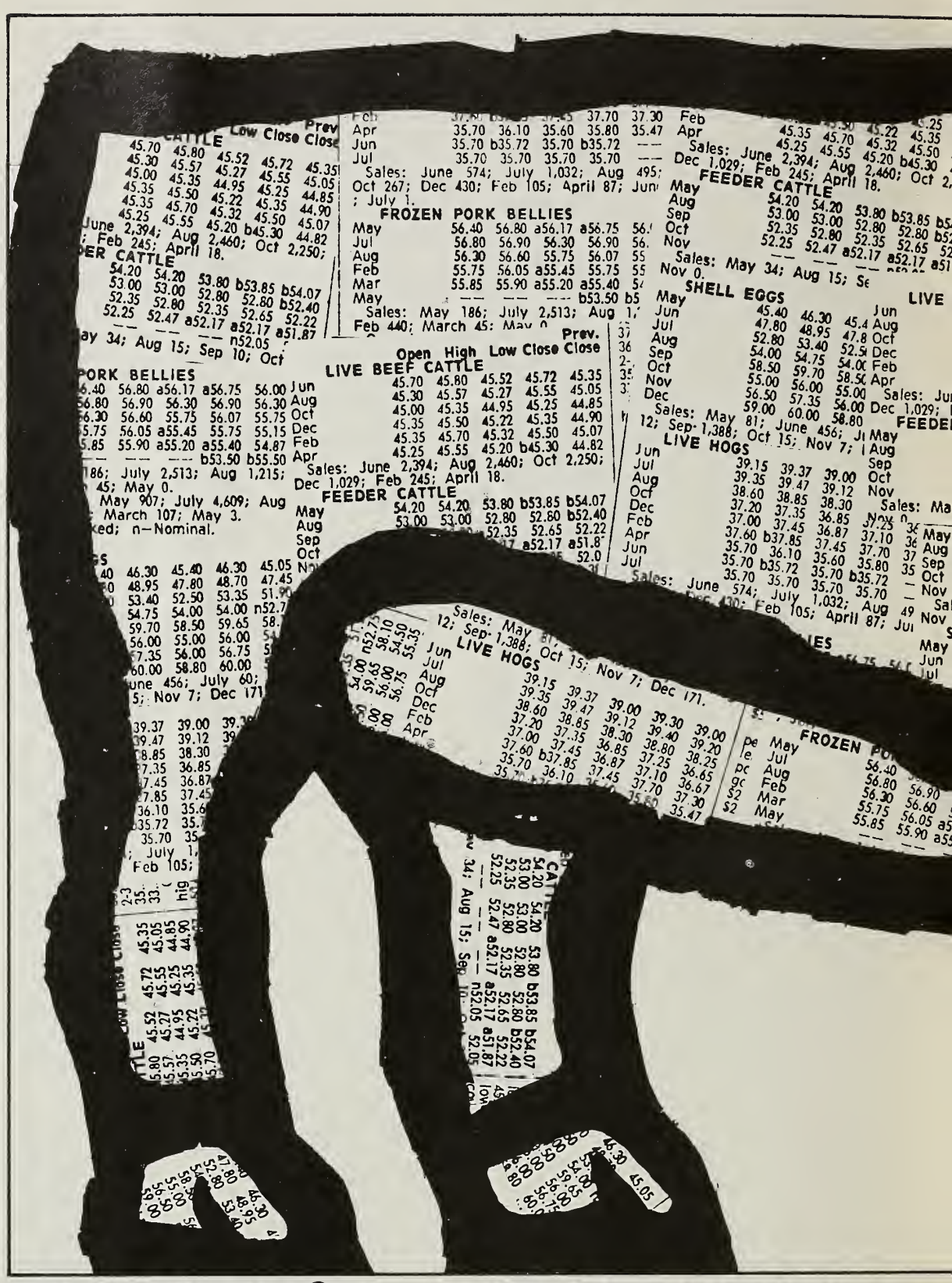
INCREASES IN AVERAGE VALUE OF FARM REAL ESTATE PER ACRE

State & Region	Percent Increase Mar. 1, '72-Mar. 1, '73	Percent Increase Mar. 1, '67-Mar. 1, '73
Northeast		
Maine	[2]	[3]
N.H.	[2]	[3]
Vt.	[2]	[3]
Mass.	[2]	[3]
R.I.	[2]	[3]
Conn.	[2]	[3]
N.Y.	13	76
N.J.	17	111
Pa.	20	101
Del.	16	55
Md.	18	91
Lake States		
Mich.	18	50
Wisc.	21	79
Minn.	13	44
Corn Belt		
Ohio	16	47
Ind.	16	31
Ill.	12	29
Iowa	16	41
Mo.	12	60
N. Plains		
N. Dak.	12	42
S. Dak.	10	30
Nebr.	14	45
Kans.	16	37
Appalachian		
Va.	15	71
W. Va.	19	111
N.C.	19	64
Ky.	12	53
Tenn.	17	67
Southeast		
S.C.	10	79
Ga.	15	101
Fla.	[1]	[1]
Ala.	15	67
Delta States		
Miss.	11	44
Ark.	12	59
La.	7	48
S. Plains		
Okla.	15	50
Texas	13	56
Mountain		
Mont.	13	59
Idaho	13	59
Wyo.	14	53
Colo.	19	52
N. Mex.	11	51
Ariz.	7	70
Utah	8	86
Nev.	18	151
Pacific		
Wash.	12	45
Oreg.	10	87
Calif.	2	15

[1] Insufficient data for publication. [2] Combined average for Conn., Maine, Mass., N.H., R.I., and Vt. is 14 percent. [3] Combined average for Conn., Maine, Mass., N.H., R.I., and Vt. is 98 percent.

[Based on an article by Robert D. Reinsel, Farm Production Economics Division, in *Farm Real Estate Market Developments*, Supplement No. 3 to CD-77, May 1973.]

Trading in livestock futures is less than 10 years old, but the growth in volume has been dramatic. Here, a new ERS study takes a look at the pros and cons of hedging live cattle and hogs.



THERE'S A FUTURE IN

Trading in commodity futures is at a record level.

Since organized trading in futures began in this country more than 100 years ago, it has passed through several periods of rapid growth. During the last decade, both volume and the number of commodities traded have increased dramatically. In certain years, the dollar volume of trading on the Chicago Board of Trade alone has approached that of the New York Stock Exchange. Now, there are 20 licensed exchanges in the U.S., doing business in the neighborhood of $200 billion a year.

This impressive figure represents the dollar volume of all the commodities traded. They range from soybeans and grain sorghum to plywood, and they have one thing in common: Those speculating in them can make—or lose—a fortune in a matter of minutes.

This is the glamorous aspect of futures trading—the ability of speculators to make money by playing the market. But at least as important is the businessman on the other end, the hedger, who uses the futures market to protect himself against financial loss.

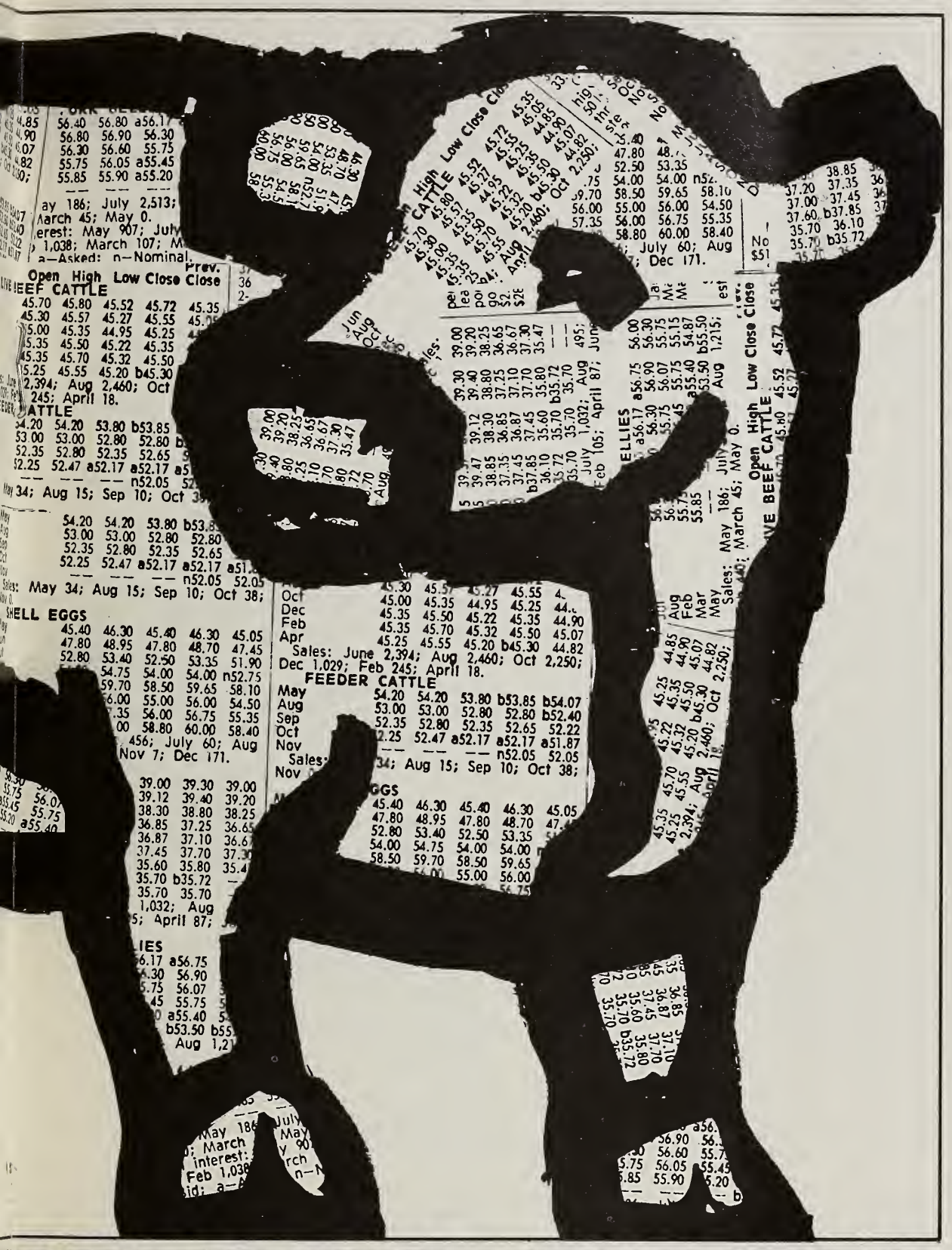
A new ERS study took a look at hedging in the livestock futures market. What it found could encourage more cattle and hog producers interested in minimizing financial risk this way.

Why futures trading? The exchanges where commodities are bought and sold grew out of the need for advanced sales by merchants who accumulated farm stocks.

Until development of the commodities market in the mid-1800's, trading was chaotic—corn, wheat, and other crops would pour into the big marketing cities at harvest time. This created a glut, and in turn, low prices for farmers.

At other times of the year, the situation was reversed. Stocks of commodities were depleted, and demand drove prices sky high.

With the changing patterns of commodity movements, the main business of the exchanges today is the trading of commodity futures—which are contracts for the sale and purchase of yet-to-be marketed products. Selling crops this way provides wide dissemination of information on price expectations and thereby facilitates a more even flow of products to market. Today's futures prices reflect conditions which eventually influence the retail prices of eggs, bread, beef, pork, and other



LIVESTOCK FUTURES

products several months hence.

Livestock enters in. Unlike many other commodity futures, livestock trading is of relatively recent vintage. It was not until November 1964 that trading in live cattle futures opened on the Chicago Mercantile Exchange. Trading in live hogs began 15 months later.

Since then, livestock futures trading has literally grown by leaps and bounds. Between 1965 and 1972, the volume of cattle futures increased from 2.7 billion pounds to 38.6 billion pounds. Trading in hog futures went from 71 million pounds in 1965 to almost 11 billion in 1972.

In terms of dollar volume, livestock futures trading is now more than a $16 billion annual business.

Hedging explained. Why would a cattle or hog feeder use the futures market? A major reason is to attempt to reduce risk from the sharp price fluctuations common with livestock.

For example, to use the standard contract size of 40,000 pounds, a cattle feeder may put 40 head of cattle in a feedlot. He plans to feed them to 1,000 pounds each and then sell them. Hedging this, he would be able to fix the price for the cattle when they are placed in the feedlot, 4 months before the finished cattle are actually sold.

He would do this by selling a futures contract calling for delivery 4 months hence. In this way, the price risk may be partially shifted to a speculative buyer of futures.

Chances are that this contract will never be fulfilled. Instead, it will be terminated by an offsetting transaction in which the seller—the cattle feeder—will buy back an equal amount of cattle futures on the exchange before the original contract comes due. By maintaining opposite positions in cash and futures during the feeding period, the hedger hopes to offset what happens in the cash market by what happens in futures. A loss in cash will mean a gain in futures, and vice versa.

The best hedge. Normally, traders have tended to talk about hedging as if the cattle feeder always sold a full animal for every animal he had on feed. In actuality, however, the hedge is usually "incomplete"—that is, only part of an animal is sold for each animal on feed. Another way of saying this is that the feeder trades in smaller quantities on the futures market than he does on the cash market.

According to the ERS study, the cattle feeder can best shift his risk by selling about three-quarters of a steer for every steer in the feedlot. Over the years, the study said, this "minimum risk hedging level" has resulted in the greatest stability of return to the feeder. (*Continued*)

The study also indicated—not surprisingly—that the futures market can be an effective way for livestock feeders to reduce risk. Yet in spite of the rapidly increasing volume of livestock futures trading, it represents only a small fraction of cattle on feed in the U.S. In 1969, less than 5 percent of the 11 million head of cattle on feed at the time were covered by futures contracts.

Not well known. Why don't more cattlemen use the futures market? According to an ERS economist who specializes in futures, one reason is lack of familiarity—futures trading is little known and even less understood.

Another factor is past experience. In its brief history, the livestock futures market has not always treated the "short" hedger (the one who is selling, who is literally short in the futures market) favorably. This is partly because rising livestock prices have characterized the market in recent years. When prices are going up, it is logically to the producer's disadvantage to fix a price for his cattle in advance. When prices are declining, he gets more by "selling forward" in the futures market.

The ERS study found that live cattle and hog futures can "give reason for concern about price bias" against the short hedger. Historically, it said, prices have tended to rise over the life of the contract, resulting in losses to short hedgers. Over the period analyzed in the study —from March 1965 to March 1971 —increases in futures prices averaged about 30¢ per pound per month for both cattle and hogs.

If this tendency were to persist, price biases of this magnitude would present a serious barrier to hedging. But the study concludes that this is not likely to be the case.

Future course of prices. Some economists now foresee a general lowering of livestock prices.

They reason that sooner or later the strong demand for beef, coupled with record high prices, will cause cattlemen to overexpand. Slaughter supplies will become greater than the market can bear, prices will drop, and cattlemen will no longer hold extra heifers for herd expansion. This in turn will put even more cattle on the market, continuing the cycle of lower prices.

It's now anticipated that by early 1974, cattle prices will be down from current levels. Though many things could happen to upset this forecast, there is general agreement that the short hedger may soon find the market in a position to treat him better.

Futures under fire. Meanwhile, futures trading in livestock and other commodities has not escaped criticism. Among other things, there have been charges that operation of the commodity exchanges is open to various abuses, including price manipulation and other collusive and deceptive practices. In particular, it has been alleged that the small investor not wise in the ways of futures can be taken advantage of by professional traders.

Because of the dynamic influences in commodity markets, the established arrangements for trading tend to get out of date, and even to inject artificial influences into prices. This underlines the mounting concern in

A Futures Glossary

Basis—The difference between the price of a futures contract and the price of the same or similar commodity in spot transactions.

Delivery Month—The calendar month during which a futures contract matures.

Futures Contract—An agreement set forth in standardized terms under rules of an organized commodity exchange to buy and receive, or to sell and deliver, a commodity at a future date.

Hedging—Using the futures market to reduce exposure to price risk and to help assure profits on business activities.

Long Position—One in which an individual's inventory plus forward purchases exceed his forward sales; also, the buying side of an open futures contract.

Margin—The amount deposited by a trader with his broker to insure performance on contract commitments.

Open Interest—The total of unfilled or unsatisfied futures contracts on either side of the market.

Regulated Commodities — Those regulated by the Commodity Exchange Authority (CEA) under specific provisions of the Commodity Exchange Act. The CEA is concerned with safeguarding futures trading against price manipulation and abusive trading practices.

Short Position—One in which an individual's forward sales exceed his inventory plus forward purchases; also, the selling side of an open futures contract.

Straddle or Spread—The purchase of one future against the sale of another future of the same commodity or a different commodity in the same or different markets.

Volume of Trading—The total purchases or sales of a commodity future during a specified period.

LIVESTOCK'S GROWTH ON FUTURES MARKET SINCE 1965 HAS BEEN RAPID*

Year	Live Cattle	Live Hogs	Wheat	Corn	Soybeans
	Million pounds	*Million pounds*	*Million bushels*	*Million bushels*	*Million bushels*
1965-66	2,663	71	6,000	5,376	16,277
1966-67	6,768	180	10,425	13,068	9,501
1967-68	7,789	221	9,259	7,559	4,805
1968-69	21,738	257	6,930	8,586	4,714
1969-70	35,138	2,644	3,714	6,500	6,435
1970-71	24,241	5,731	4,235	13,742	13,431
1971-72	38,600	10,991	3,535	7,787	19,803

*Annual volume of futures trading, selected commodities, fiscal years 1965-66 to 1971-72.

many quarters. The U.S. Congress is currently taking a critical look at futures trading to see what kinds of changes may be needed. The General Accounting Office, the accounting arm of government, has appointed a team of auditors to review the regulation of futures trading.

The Small Business Committee of the U.S. House of Representatives is also planning to hold hearings that would include a critical look at grain futures. The Commodity Exchange Authority and the exchanges themselves also continually seek ways for improving trading rules.

Whatever the outcome of these investigations, and however valid some objections to futures trading may be, the futures market does bring prices out into the open. It increases the range of information and judgments brought to bear on price, and makes it easier for farmers and other businessmen to choose a preferred course of action.

And, in its valuable function of reducing risks to the farmer, futures trading in turn produces more market stability for everyone.

[Based on manuscript by Richard G. Heifner, Marketing Economics Division, entitled Hedging Potential in Grain Storage and Livestock Feeding.]

In the Long Haul, Unit Trains Not Always Ideal

Unit trains have been credited with cutting grain shipping rates in half, but can they do the same for fresh produce from the West?

Chances are very slim, concludes a recent ERS study.

As its name implies, the unit train is a set of permanently coupled rail cars operating as a unit and shuttling between two fixed points. Because of its unchanging makeup and route, a unit train can bypass many time-consuming terminal activities and operate as much as 70–80 percent of the time—versus 10 percent for regular trains.

To determine if Western produce shippers could benefit from unit trains, ERS examined two possibilities: a unit train to ship apples from Yakima, Wash., to New York City, and another to haul lettuce to the same destination from Salinas, Calif.

In each instance, the trains would move on a weekly basis, use refrigerated cars, and spend 77 hours in transit.

On this schedule, each car of a unit train for apples would be loaded 26 times a year—against roughly 20 times for conventional trains.

Assuming the railroad earns $1,243 per carload—the 1971 rate for apples between Yakima and New York—each car of the unit train would gross $32,318 per year.

For conventional trains with 20 loadings, each car would gross $24,860 a year.

The additional $7,458 earned by unit cars, however, would probably be used to cover costs of establishing the unit train and its required facilities, rather than boosting the railroad's net earnings.

Also, the railroads may have difficulty selling the additional carrying capacity created by unit trains. Diversion of all apples moving by truck to New York—an unlikely prospect—would add only about 58 carloads a year. The increase in rail revenues would be negligible.

Ideally, some savings should be realized from the increased car utilization offered by unit trains. Based on current rental and operating costs for refrigerated cars, and the number of annual trips made by each type of train, the savings amounted to $54.67 per trip for each car in the unit train.

Since roughly 1,560 carloads of apples are shipped to New York each year, the unit train, which makes 26 trips, would require 60 cars. The conventional train, with 20 loadings, would need 78 cars.

Total annual savings from use of the unit train would then amount to $85,285 ($54.67 x 60 cars x 26 loadings).

It's highly unlikely these savings can be realized, however, since unit trains operate with a nearly fixed number of cars. Weekly apple shipments to New York range from 2 to 58 carloads—a widely varying demand for service that makes the concept of a unit train unworkable.

Unlike apple shipments, minimum weekly lettuce hauls appeared sufficient to justify use of a unit train. Savings on refrigerator car rentals were also significant. But the study found that loss of revenues on the backhaul could easily offset all or most of the savings.

[Based on an article "Feasibility of Unit Trains for Moving Apples and Lettuce From the West" by T.Q. Hutchinson, Marketing Economics Division, appearing in *Marketing and Transportation Situation*, MTS-189, May 1973.]

Food Buying Patterns Remain Highly Stable

The share of the consumer's food dollar spent on fresh versus processed products has changed only slightly in 20 years.

In tracing American food consumption patterns, ERS researchers placed all foods eaten in the U.S. into two broad categories—"generic" and "manufactured." Generic items include both fresh products and those that are in some way preserved—by freezing, for example—but are otherwise unchanged.

Fresh products edged up from around 36 percent of total food outlays in 1952 to nearly 39 percent in 1971, when valued at constant prices. Gains in meat, poultry, and seafood more than offset declining consumption of fresh fruits, vegetables, and shell eggs.

Preserved products dipped slightly to 29 percent of food spending. While canned goods held steady, frozen products registered small gains. Dried products—including coffee, tea, and dried beans—retreated to about 4 percent.

Just over two-thirds of total food expenditures go for the entire category of generic products. Over the past 2 decades, however, this share advanced less than 1 percent.

The remaining category—manufactured items—subdivides into derivative products, like butter made

from milk, and comminuted products, which are made by combining various ingredients. Both classes dropped fractionally since the early 1950's.

When foods are classed by degree of preparation, changes over the 20-year span become more noticeable. As a share of total food expenditures, ready-to-eat products fell from 47 to 43 percent.

At the same time, ready-to-cook items upped their share by 5 percent to nearly 54 percent.

[Based on an article by Alden C. Manchester, Marketing Economics Division, entitled "Total Consumer Buying of Fresh Versus Processed Foods Remains Stable" in the *National Food Situation*, NFS-144, May 1973.]

A Fourth More Pork Needed by 1985

Hogmen will have to up their production by a fourth by 1985 to fill the expected demand for pork.

ERS foresees 1985 pork consumption as averaging around 70 pounds per person. This compares with 63 pounds during the 1960's and 67 pounds in 1972.

To meet pork requirements in 1985, production will have to top 16 billion pounds, up from just over 12 billion in 1965–70. Much of the increase will probably come from a sizable jump in the number of sows farrowing, along with further increases in the number of pigs saved per litter.

A continuation of the cyclical swings in production in the years ahead seems likely as producers overreact to high or low prices. However, seasonal variations within a given year will be more moderate than in the past.

Pork quality will continue to improve. Producers are becoming more aware of the type of meat consumers prefer and are marketing hogs that yield a lower percentage of lard.

[Based on remarks by Donald Seaborg, Economic and Statistical Analysis Division, before the 65th Annual Convention of the American Feed Manufacturers Association, Inc., Kansas City, Mo., May 8, 1973.]

Florida Tomato Crop Not Yet Ripe For Machine Harvesting

The mechanical harvesting of tomatoes will come more slowly to Florida than it did to California, a new economic study indicates.

At present, costs are less in Florida to hand harvest tomatoes for the fresh market than to mechanically harvest them. And, the study shows, costs will stay lower until minimum wage levels exceed $1.60 an hour. [The minimum wage for agricultural workers is now $1.30 an hour. Proposed Federal legislation would bring it to $1.90 an hour over the next 3 years.]

However, the economic feasibility of hand or mechanical harvesting is not the only determinant of what will be used. Add three more important considerations: (1) the existence of available labor for hand picking, (2) the higher risks associated with growing tomatoes for mechanical harvesting, and (3) the development of a complete system for growing and harvesting tomatoes mechanically.

Florida generally has had workers available to harvest tomatoes and thus will not likely change rapidly to mechanical harvesting.

In addition, the risks that come with growing tomatoes for mechanical harvesting—such as higher ratio of fixed to variable costs and greater managerial precision—will cause many growers to go slow on mechanizing tomato harvesting. Development of a complete system for growing and mechanically harvesting fresh market tomatoes, however, is a factor favoring its adoption.

Over the short range—the next 4 to 6 years—the study estimates that no more than 10 percent of the Florida crop would be harvested mechanically. However, if higher wage rates, labor scarcity, or other problems occur, this rate could be greatly accelerated.

Each 40-pound crate of tomatoes harvested mechanically for the fresh market reduces labor use by 13 minutes. The 10-percent adoption figure would result in a drop of 300,000 hours in total harvest labor, about a 6-percent reduction in harvest labor, or a 2-percent reduction in total labor used for tomatoes in Florida.

Harvest labor use would decline by about 800,000 hours if 25 percent of the crop were harvested mechanically and by 1.7 million hours if 50 percent were so harvested.

The workers most affected would be pickers and luggers and picker supervisors. New jobs such as sorters, additional tractor drivers, harvester operators, mechanics, and sorter supervisors are created by mechanical harvesting.

Mechanized harvesting would reduce employment peaks in tomatoes but would not eliminate seasonal employment, according to the study. A 10-percent adoption of mechanical harvesting would reduce peak employment by about 500 workers.

The total wage earnings for harvesting tomatoes would probably not change very much if minimum wages were increased, the study said. The increase in hourly earnings would tend to be offset by reduced employment due to adoption of mechanical harvesting.

The issue of mechanical harvesting has come to the forefront in the tomato industry due to increasing labor costs and increasing competition from Mexican tomatoes in the U.S. market. Mexican growers have a major advantage in their lower labor costs.

Florida's labor costs, particularly in harvesting, are not only higher than in Mexico, but are increasing more rapidly than other costs. Harvest labor costs accounted for 18 percent of total crop costs in the 1970–71 season, up from 12 percent in the 1955–56 season.

[Based on a manuscript by Glenn A. Zepp, Farm Production Economics Division, on Effects of Harvest Mechanization on the Demand for Labor in the Florida Tomato Industry, to be published by the Food and Resource Economics Department, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, Fla., in cooperation with ERS.]

Farming Under Cover

Growing crops in greenhouses is one way to lick weather problems but producers still must contend with economic uncertainties, according to a recent ERS study.

What does a 1st century Roman emperor have in common with the U.S. space program?

Aside from stargazing, the best answer might be raising food in controlled environments.

Tiberius Caesar ordered a cucumber a day and a forerunner of the modern greenhouse was built to give him cucumbers the year round. What may be the ultimate in controlled environment food growing is a system for spacecraft that's now being designed by USDA and the National Aeronautics and Space Administration.

But some countries have a more common, everyday interest in greenhouses. These glass or plastic structures are widely used by developed nations looking for variety in their winter food supply. Even some countries in Asia are using them where arid or otherwise unfriendly climate makes conventional food production difficult or impossible.

Seeking more facts about the world's greenhouse industry, ERS recently surveyed greenhouse pro-

duction and marketing practices in 41 nations.

One conclusion emerging from the study was this: Though greenhouse food crops have been commercially produced for over 100 years, such production compared to conventional field cultivation has become important in only a few countries such as Holland. The biggest hang-up? Cost.

True, new greenhouse technology has lessened the problems due to vagaries of weather. But weather troubles have been replaced with economic uncertainties.

Field production cheaper. The ERS study found that greenhouse crops are nearly always more costly per unit of product than field cultivated crops grown in the same spot and at the same time. Generally speaking, greenhouse production thrives where field production turns out a lower quality product, like summer tomatoes in northern Europe, or when the crop can't be grown at all because of the season.

Only a handful of vegetables are now being raised economically in commercial greenhouses—besides tomatoes, mostly cucumbers and lettuce.

Abu Dhabi claims one of the more elaborate greenhouse systems.

No bonanza. The limited number of crops that can be economically produced is one reason few people are making fortunes in the greenhouse business, the ERS study said. Other reasons have to do with the high fixed investment—capital investment commonly reaches $100,000 per acre in developed nations—and the constant competition from imports.

Also, greenhouse work is intensive; most must be done by hand, and few economies of scale exist beyond family-sized operations.

Farming under plastic. On the other hand, the introduction of plastic films has vastly lowered building costs and has enabled greenhouses to be used in more areas. Historically, Europe has been the hub of greenhouse production under glass, but thanks to the plastics, controlled environment structures have sprung up in such places as Greece, Turkey, Lebanon, People's Republic of China, and Korea.

Some of these newer operations are quite simple in design. The Philippines, for example, uses plastic sheets with supports to protect tender and high value crops from heavy summer rains.

The more elaborate setups use artificial cooling, carbon dioxide enrichment, artificial soil, and automated irrigation with fertilizers in solution.

One of the most elaborate systems is in the oil-rich sheikdom of Abu Dhabi on the Persian Gulf.

Using a basic technique developed by a University of Arizona scientist, Abu Dhabi has approximately 5 acres of desertland covered partly by air-inflated plastic and partly by a rigid polyethylene structure. The plants are grown in a sand culture. The water supply is desalinized sea water, to which is added nutrients to fertilize the plants.

Understandably. Abu Dhabi's operation is small by comparison to greenhouse industries using more conventional methods.

Greenhouse territory. The Netherlands, for example, has more than 18,000 acres under cover, almost all glass greenhouses producing flowers and vegetables. The Japanese, noted for their horticultural skills, recently cultivated fruits and vegetables on 872 glass-protected acres and on over 25,000 acres under plastic.

The Soviet Union has about 5,300 vegetable acres under glass. France raises food on some 2,700 greenhouse acres. Turkey recently had about 5,000 acres in greenhouses and is considering selling vegetables to Europe in the winter season.

Despite their economic and technological constraints, greenhouses are thought by many to be the wave of the future.

"Just like a factory." One of the largest and most progressive U.S. fruit and vegetable farming operations recently established an advanced greenhouse operation in Arizona. The firm's president considers it "just like a factory" and thinks greenhouses represent the "agriculture of the future." He predicts that "there's going to be one big greenhouse on your hundred-acre field where you control the gases (CO_2), the temperature, humidity . . . control everything."

[Based on the manuscript Controlled Environment Agriculture: A Global Survey of Greenhouse Food Production, by Dana Dalrymple, Foreign Development Division.]

Greenhouse History

After the time of Tiberius Caesar, greenhouse-type cultivation seemed to decline along with the Roman Empire. The next known reference appears in London in about 1600 when cucumbers were being forced early in special insulated beds.

During the next 100 years, both the French and the British developed various types of hothouse gardening structures that eventually evolved into the glass ones similar to those used today.

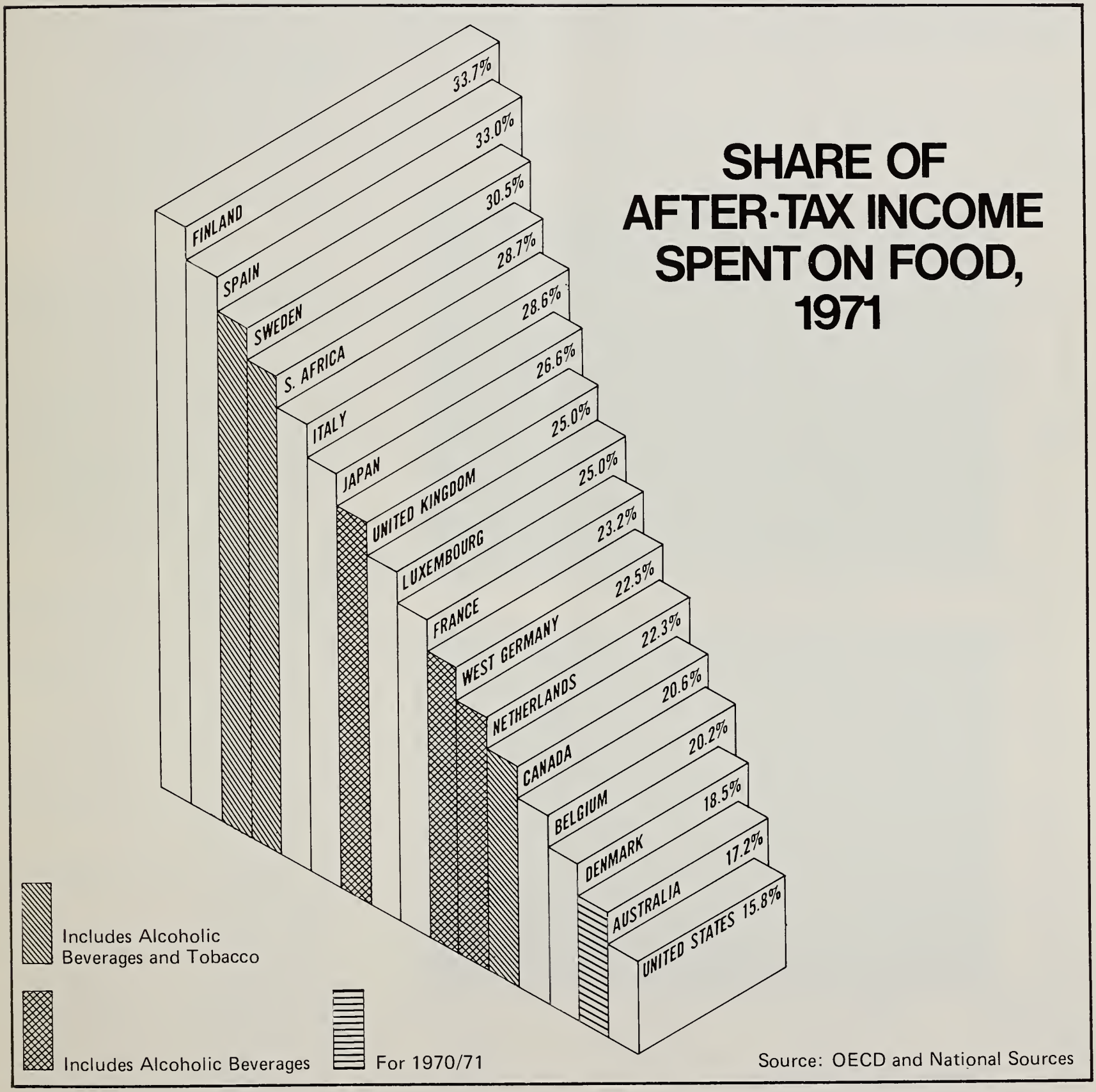
An American hothouse was introduced near Boston in the early 1700's and a small conservatory with glass windows was built on James Beckman's New York estate in 1764. This structure attained historical mention as the prison of Nathan Hale the night before his execution.

George Washington built a large conservatory on his Mount Vernon estate in the late 1780's. Destroyed by an 1835 fire, it was reconstructed and is now open to the public.

IN SPITE OF THE LEAPS in U.S. food prices, the average American family spends a smaller share of its after-tax (disposable) income for food than families in other industrialized nations. This year the share of U.S. incomes going for food is expected to be somewhat under 16 percent.

Without exception, food outlays as a percent of income have decreased over time in all developed countries. This despite a marked shift in consumption patterns—away from grain-based products and towards the more expensive poultry and livestock foods.

In 1973, though, the portion of income spent for food may show little change in many countries because of increases in prices of poultry and livestock products. As the world grain-oilseed-livestock situation returns to normal, further decreases in food's share are likely. [Based on special material provided by William P. Roenigk, formerly with Foreign Demand and Competition Division.]



REALITIES OF MALNUTRITION ARE OFTEN IGNORED

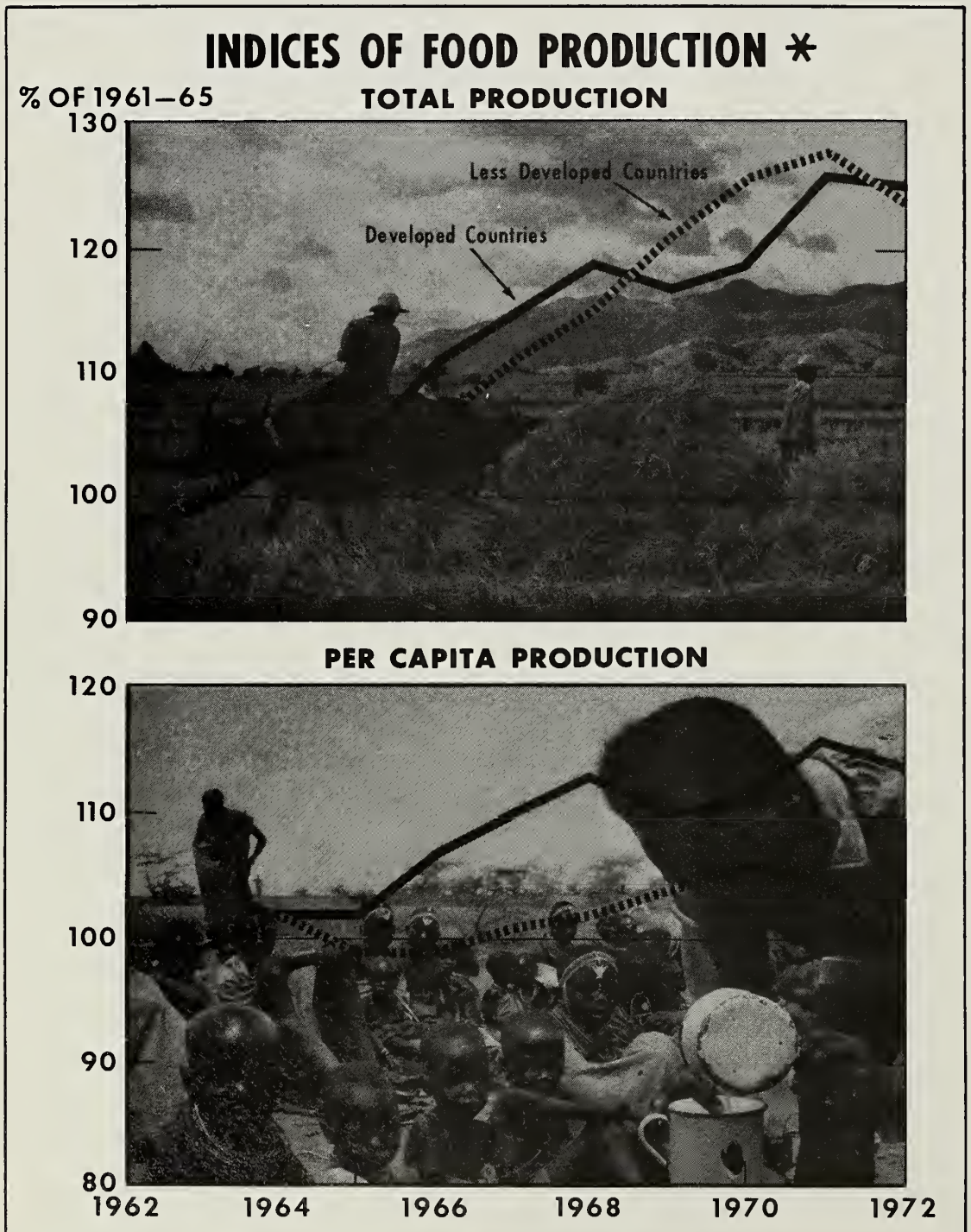
In their continuing bout with malnutrition, the lower income countries lost a round in 1972 as a result of bad weather and the heavy toll on agricultural output.

One ERS official put it this way in a recent address to a group of industrialists:

"As in business, when you're operating right on the margin between profit and loss, a bad year can wipe you out."

But the reasons why malnutrition continues to nettle the poorer countries go beyond the weather question.

The ERS spokesman listed what he termed "three critical but frequently ignored realities about efforts to improve nutrition." The first relates to agriculture, the second to economics, and the third to nutrition itself.



* North America, Europe, U.S.S.R., Japan, Republic of South Africa, Australia and New Zealand

Total food production in the lower income countries has advanced as rapidly as in the developed countries, especially since the late sixties. However, rampant population increases have absorbed most of the gains in the less developed areas. Thus, per capita food production is only slightly higher than before.

As for the future, the ERS official said that the green revolution will continue to spread, though the gains in production likely will be won at higher costs as the best land is used up.

If population growth is not curbed, improvements in per capita food consumption will be severely limited. United Nations projections to 1985 indicate a reduction in the percentage of people who will experience food shortages. But, because of population growth, the absolute number of malnourished people may remain near the present figure.

Price tag. The costs of eliminating malnutrition are staggering, and this is the second reality that is often overlooked.

To lift India's diet to the level of Western Europe or the U.S. would involve three to four times the present consumption of cereals. India has tried various ways to provide better diets, including the introduction of new grain varieties. In 1972 an estimated 40 percent of India's grain production came from these higher yielding strains compared with only 6 percent in 1967.

But recently nutrition goals have been compromised due to lack of financial resources.

India's Fourth Five Year Plan for 1969–74 featured a separate section on nutrition. Among other things it called for stabilized consumer prices. Then in 1972 grain production slipped because of adverse weather.

Cutting corners. Rather than import enough grain to make up the short-

fall, India instead chose to save foreign exchange, and food prices increased by nearly 20 percent. Food grain rations at "fair price food shops" serving the low income population had to be cut in half in some areas.

In Haiti, a nutrition rehabilitation program is being tried for children. Estimated costs of this program range from $40 to $75 per child enrolled. Yet Haiti's per capita income averages only about $70 per year.

Thailand is experimenting with a day care center program. Food costs alone, if the program were expanded nationwide, would be equivalent to 16 percent of the central government's entire revenue.

Three years ago ERS estimated what it would cost to fortify 12 million tons of cereals—with amino acids, minerals, and vitamins—consumed in what was then East Pakistan and is now Bangladesh. The figure was $150 million—25 percent of what was then the Government of East Pakistan's budget.

The third reality, relating to nutrition, ties in with a country's economic development strategies.

Plight of the poor. A country's economic growth may raise nutritional levels on the average, but at the same time, make low income people worse off. One reason is that as people's incomes go up, they desire more animal products. In effect, the wealthier consumers bid grain off the plates of the poor for use as livestock feed.

There's also the situation where high income countries attract food away from people in low income countries who cannot pay the price. Peru, for instance, exports large amounts of fish and fish products for livestock feed to Europe and the U.S. Peru's lower income people simply can't compete in the world's marketplace for these high protein foods.

"This food imperialism through the market place, by the rich over the poor, is one of the most crucial problems confronting man," the ERS official said.

[Based on speech by Lyle P. Schertz, Deputy Administrator, to the National American Chemical Society, Dallas, Texas, April 11, 1973, on "Nutrition Realities in the Lower Income Countries."]

Addresses of State experiment stations:

This ready reference list for readers wishing to order publications and source material published through State experiment stations will be updated again in December 1973.

STATE	CITY	ZIP CODE
ALABAMA	Auburn	36830
ALASKA	University of Alaska	99701
ARIZONA	Tucson	85721
ARKANSAS	Fayetteville	72701
CALIFORNIA	Berkeley	94720
	Davis	95616
	Parlier	93648
	Riverside (Citrus Research Center)	92502
COLORADO	Fort Collins	80521
CONNECTICUT	New Haven	06504
	Storrs	06268
DELAWARE	Newark	19711
FLORIDA	Gainesville	32601
GEORGIA	Athens	30601
	Experiment	30212
	Tifton	21794
GUAM	Agana	96910
HAWAII	Honolulu	96822
IDAHO	Moscow	83843
ILLINOIS	Urbana	61801
INDIANA	Lafayette	47907
IOWA	Ames	50010
KANSAS	Manhattan	66502
KENTUCKY	Lexington	40506
LOUISIANA	Baton Rouge	70803
MAINE	Orono	04473
MARYLAND	College Park	20742
MASSACHUSETTS	Amherst	01002
MICHIGAN	East Lansing	48823
MINNESOTA	St. Paul	55101
MISSISSIPPI	State College	39762
MISSOURI	Columbia	65201
MONTANA	Bozeman	59715
NEBRASKA	Lincoln	68503
NEVADA	Reno	89507
NEW HAMPSHIRE	Durham	03824
NEW JERSEY	New Brunswick	08903
NEW MEXICO	Las Cruces N.M. State University (P.O. Box 3-BF)	88001
NEW YORK	Ithaca (Cornell Station)	14850
	Geneva (State Station)	14456
NORTH CAROLINA	Raleigh (Box 5847)	27607
NORTH DAKOTA	Fargo (State University Station)	58102
OHIO	Columbus (Ohio State University)	43210
	Wooster	44691
OKLAHOMA	Stillwater	74074
OREGON	Corvallis	97331
PENNSYLVANIA	University Park (106 Armsby Building)	16802
PUERTO RICO	Rio Piedras	00928
RHODE ISLAND	Kingston	02881
SOUTH CAROLINA	Clemson	29631
SOUTH DAKOTA	Brookings	57006
TENNESSEE	Knoxville	37901
TEXAS	College Station	77843
UTAH	Logan	84321
VERMONT	Burlington	05401
VIRGINIA	Blacksburg	24061
VIRGIN ISLANDS	St. Croix	00820
WASHINGTON	Pullman	99163
WEST VIRGINIA	Morgantown	26506
WISCONSIN	Madison	53706
WYOMING	Laramie (University Station Box 3354)	82070

USSR Considers Growing Soybeans in New Areas

The USSR may be seriously considering further development of soybean production, which is now of limited importance.

An article in the Soviet press reported that soybeans, now grown mainly in the far eastern part of the country, could and should be introduced into other areas. Areas with favorable conditions for soybeans were claimed to include the Ukraine, Moldavia, N. Caucasus, sections of the Volga region, the South Urals, at least two republics of Central Asia, and West and East Siberia.

The article also said that in several parts of Central Asia soybeans could be effectively grown in rotation with rice and cotton.

The following were cited as requisites to expanding soybean output: faster and more modern techniques for developing higher yielding varieties; increased use of fertilizers; expanded production and use of insecticides and herbicides; and development of more efficient machinery for seeding, cultivating and harvesting soybeans.

Though still a minor soybean producer, the USSR has been gradually increasing the area under cultivation. About 2.1 million acres were sown in 1971, 24 percent more than in 1961. Annual production in 1961–71 climbed from about 344,000 tons to 535,000.

[Based on special material provided by Angel O. Byrne, Foreign Demand and Competition Division.]

Recent Publications

Single copies of the publications listed here are available free from The Farm Index, Office of Management Services, U.S. Department of Agriculture, Washington, D.C. 20250. However, publications indicated by (*) may be obtained only by writing to the experiment station or university. For addresses, see the July and December issues of The Farm Index.

The Economic Effects of Pawtuckaway State Park: Effect of Park Use on Environmental Quality. Chauncey T.K. Ching and George E. Frick, Water Resources Research Center, University of New Hampshire, cooperating with Farm Production Economics Division and Natural Resource Economics Division. Research Report No. 8.*

This report concerns aspects of environmental quality as they are affected by park development. Specifically, the relation between water quality of the lake and boating practices/attendance patterns was analyzed. The results of a survey of private residents are included; they reveal the attitudes of the landowners concerning the impact of the park on the ecology of the area and the effect of the park on surrounding property values.

Comparative Performance and Economics of Herbicide Treatments for Weed Control in Rice. Roy J. Smith and Troy Mullins, University of Arkansas, cooperating with Economic Research Service. Ark. Agr. Expt. Sta. Report Series 206.*

This is a report on the current status of research involving certain chemicals that require registration under the Federal Insecticide, Fungicide, and Rodenticide Act. Among other findings, the study concluded that although new herbicides used in weed-control programs control weeds sufficiently to increase grain yields, their high per-acre costs do not permit favorable economic returns. However, as the use of new herbicides increases, prices may decrease and make their use profitable for controlling weeds in rice.

World Monetary Conditions in Relation to Agricultural Trade. O. Halbert Goolsby and Amalia Vellianitis, Foreign Demand and Competition Division. WMC–4.

The purpose of this report is to provide economic intelligence on international monetary and financial affairs for people concerned with promoting U.S. agricultural products.

Agricultural Statistics of Eastern Europe and the Soviet Union 1950–70. Foreign Demand and Competition Division. ERS–For. 349.

This report updates *Agricultural Statistics of Eastern Europe and the Soviet Union, 1950–66,* ERS–For. 252. This publication contains 99 tables of statistics on land use, farm machinery, fertilizer availability, crop production, livestock and poultry numbers, livestock products, and per capita consumption of selected foods. Data are presented for Albania, Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, Romania, Yugoslavia, and the Soviet Union.

An Economic Analysis of Cling Peach Production With Emphasis on Harvest Mechanization. Verner N. Grise and Stanley S. Johnson, Farm Production Economics Division. AER–240.

Part of a research program, this report is designed to investigate primary and secondary economic and social effects of mechanizing production of U.S. fruits and vegetables. Mechanization of cling harvest would call for a series of adjustments by growers and workers. Growers would have to increase investments in machinery and change some cultural practices. Some workers would have to acquire higher skills.

Economic Trends

Item	Unit or Base Period	1967	1972 Year	1972 Apr.	1973 Feb.	1973 Mar.	1973 Apr.
Prices:							
Prices received by farmers	1967=100	—	126	120	149	159	157
Crops	1967=100	—	115	112	133	140	143
Livestock and products	1967=100	—	134	126	161	174	168
Prices paid, interest, taxes and wage rates	1967=100	—	127	125	136	138	140
Family living items	1967=100	—	124	123	131	132	134
Production items	1967=100	—	122	119	134	138	139
Ratio [1]	1967=100	—	100	96	110	115	112
Wholesale prices, all commodities	1967=100	—	119.1	117.5	126.9	129.7	130.7
Industrial commodities	1967=100	—	117.9	117.3	121.3	122.7	124.4
Farm products	1967=100	—	125.0	119.1	150.9	160.9	160.6
Processed foods and feeds	1967=100	—	120.8	117.7	137.0	141.4	139.8
Consumer price index, all items	1967=100	—	125.3	124.3	128.6	129.8	130.7
Food	1967=100	—	123.5	122.4	131.1	134.5	136.5
Farm Food Market Basket: [2]							
Retail cost	1967=100	—	121.3	119.9	130.4	134.9	137.0
Farm value	1967=100	—	124.4	119.9	144.9	155.1	156.2
Farm-retail spread	1967=100	—	119.3	119.9	121.2	122.1	124.9
Farmers' share of retail cost	Percent	—	40	39	43	45	44
Farm Income: [3]							
Volume of farm marketings	1967=100	—	111	79	85	84	75
Cash receipts from farm marketings	Million dollars	42,693	58,550	3,538	4,618	5,006	4,400
Crops	Million dollars	18,434	24,233	955	1,571	1,462	1,200
Livestock and products	Million dollars	24,259	34,317	2,583	3,047	3,544	3,200
Realized gross income [4]	Billion dollars	49.0	66.4	—	—	75.6	—
Farm production expenses [4]	Billion dollars	34.8	47.2	—	—	53.5	—
Realized net income [4]	Billion dollars	14.2	19.2	—	—	22.1	—
Agricultural Trade:							
Agricultural exports	Million dollars	—	9,404	628	1,179	1,408	1,264
Agricultural imports	Million dollars	—	6,459	486	615	659	696
Land Values:							
Average value per acre	Dollars	[6]168	[7]216	—	—	—	—
Total value of farm real estate	Billion dollars	[6]181.9	[7]228.1	—	—	—	—
Gross National Product: [4]	Billion dollars	793.9	1,151.8	—	—	1,237.9	—
Consumption	Billion dollars	492.1	721.0	—	—	773.6	—
Investment	Billion dollars	116.6	180.4	—	—	199.7	—
Government expenditures	Billion dollars	180.1	254.6	—	—	266.8	—
Net exports	Billion dollars	5.2	—4.2	—	—	—2.2	—
Income and Spending: [5]							
Personal income, annual rate	Billion dollars	629.3	935.9	919.4	994.5	1,001.3	1,008.9
Total retail sales, monthly rate	Million dollars	26,151	37,365	36,296	41,242	41,939	41,328
Retail sales of food group, monthly rate	Million dollars	5,759	7,918	7,795	8,409	8,427	—
Employment and Wages: [5]							
Total civilian employment	Millions	74.4	[8]81.7	[8]81.2	[8]83.1	[8]83.9	[8]83.9
Agricultural	Millions	3.8	[8]3.5	[8]3.3	[8]3.4	[8]3.5	[8]3.3
Rate of unemployment	Percent	3.8	5.6	5.8	5.1	5.0	5.0
Workweek in manufacturing	Hours	40.6	40.6	40.8	40.9	40.9	41.0
Hourly earnings in manufacturing, unadjusted	Dollars	2.83	3.81	3.76	3.97	3.98	40.1
Industrial Production: [5]	1967 = 100	—	114	113	121	122	123
Manufacturers' Shipments and Inventories: [5]							
Total shipments, monthly rate	Million dollars	46,449	62,356	61,219	69,123	70,081	71,111
Total inventories, book value end of month	Million dollars	84,599	107,047	102,428	108,414	109,588	109,590
Total new orders, monthly rate	Million dollars	46,763	63,368	61,685	71,042	73,993	73,597

[1] Ratio of index of prices received by farmers to index of prices paid, interest, taxes, and farm wage rates. [2] Average annual quantities of farm food products purchased by urban wage-earner and clerical worker households (including those of single workers living alone) in 1959–61—estimated monthly. [3] Annual and quarterly data are on 50-State basis. [4] Annual rates seasonally adjusted first quarter. [5] Seasonally adjusted. [6] As of March 1, 1967. [7] As of March 1, 1972. [8] Beginning January 1972 data not strictly comparable with prior data because of adjustment to 1970 Census data.

Sources: U.S. Dept. of Agriculture (Farm Income Situation, Marketing and Transportation Situation, Agricultural Prices, Foreign Agricultural Trade and Farm Real Estate Market Developments); U.S. Dept. of Commerce (Current Industrial Reports, Business News Reports, Monthly Retail Trade Report and Survey of Current Business); and U.S. Dept. of Labor (The Labor Force and Wholesale Price Index).

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